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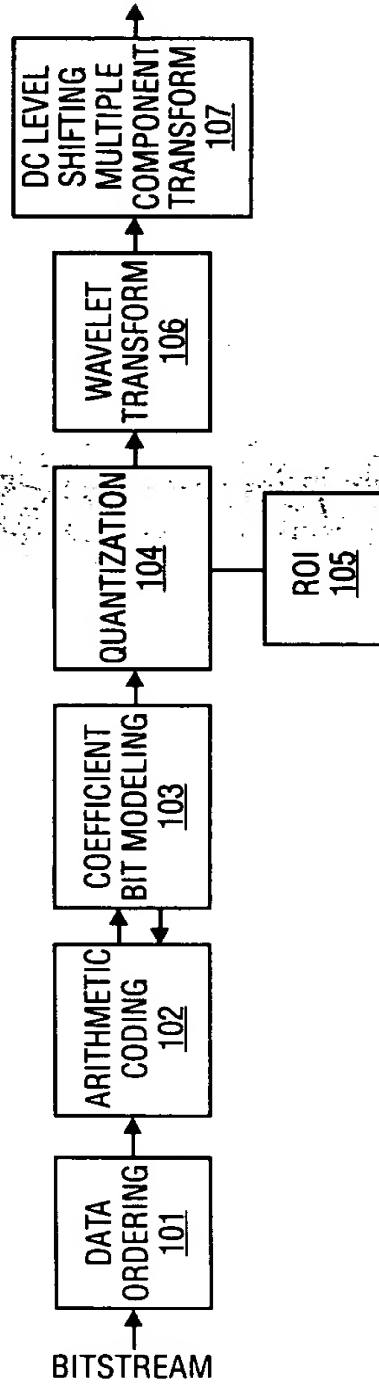


FIG. 1

BEST AVAILABLE COPY



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| | | | | | | | |
|---------|----------|----------|----------|----------|---------|---------|---------|
| SP 0 | SP 4 | C 8 | C 12 | C 16 | C 20 | C 24 | C 28 |
| R 1 | SP 5 | C 9 | C 13 | C 17 | C 21 | C 25 | C 29 |
| R 2 | SP 6 | SP 10 | SP 14 | SP 18 | C 22 | C 26 | C 30 |
| SP 3 | SP 7 | R 11 | R 15 | SP 19 | C 23 | C 27 | C 31 |
| C 32 | SP 36 | SP 40 | SP 44 | SP 48 | C 52 | C 56 | C 60 |
| C 33 | C 37 | C 41 | C 45 | C 49 | C 53 | C 57 | C 61 |
| C 34 | C 38 | C 42 | C 46 | C 50 | C 54 | C 58 | C 62 |
| C 25 | C 39 | C 43 | C 47 | C 51 | C 55 | C 59 | C 63 |

FIG. 2A



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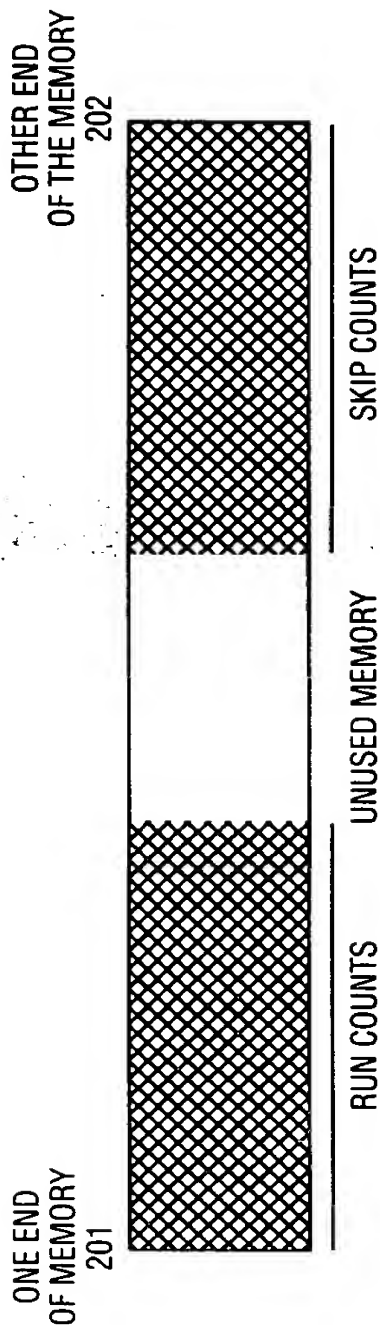


FIG. 2B

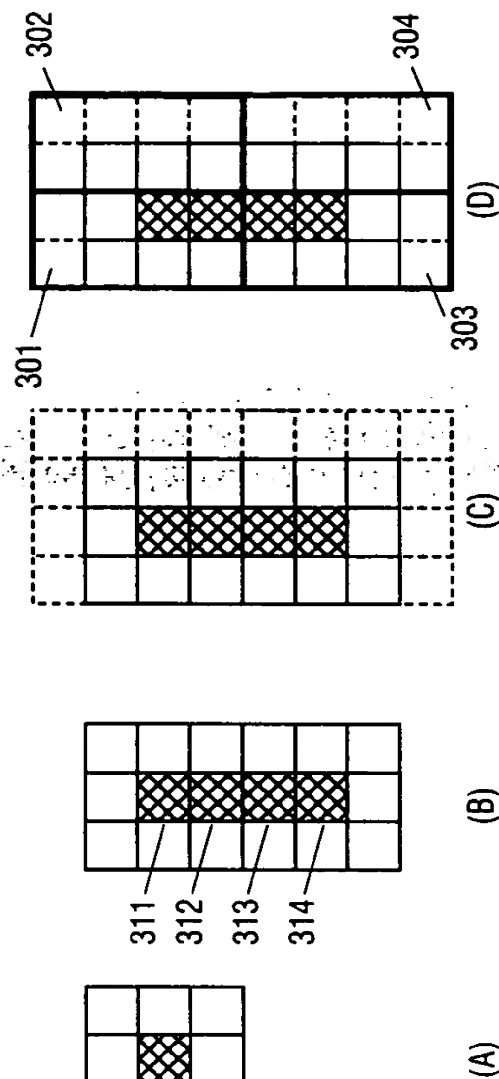


FIG. 3



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| | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | | | | |
|---|---|---|---|---|---|---|---|---|---|--|---|--|
| 0 | A | | B | | A | | B | | A | | B | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| 1 | C | | D | | C | | D | | C | | D | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| 2 | A | | B | | A | | B | | A | | B | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| 3 | C | | D | | C | | D | | C | | D | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| 0 | A | | B | | A | | B | | A | | B | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |

FIG. 4



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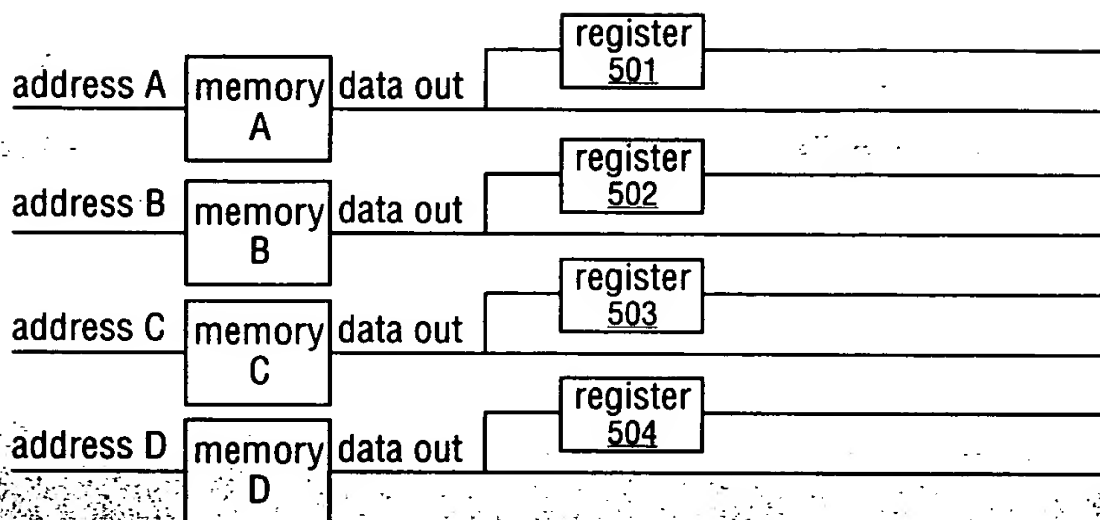


FIG. 5

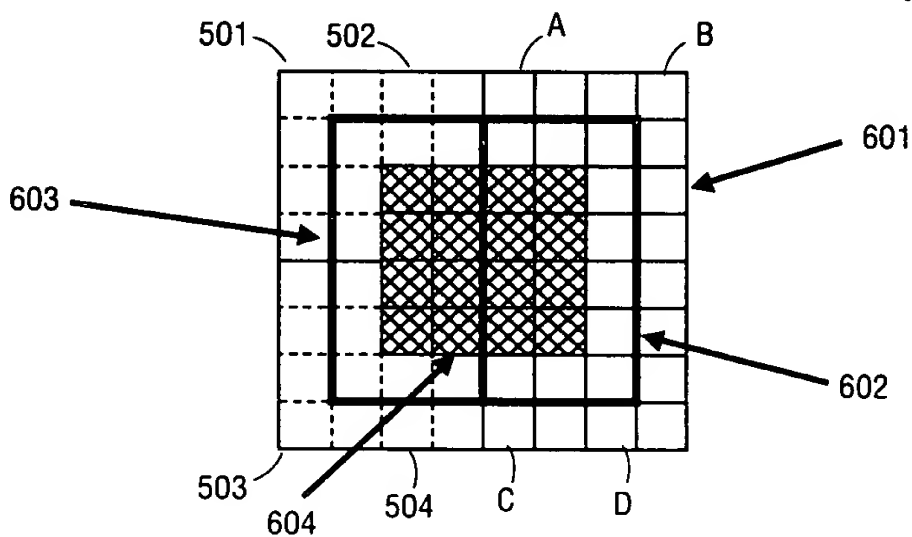


FIG. 6



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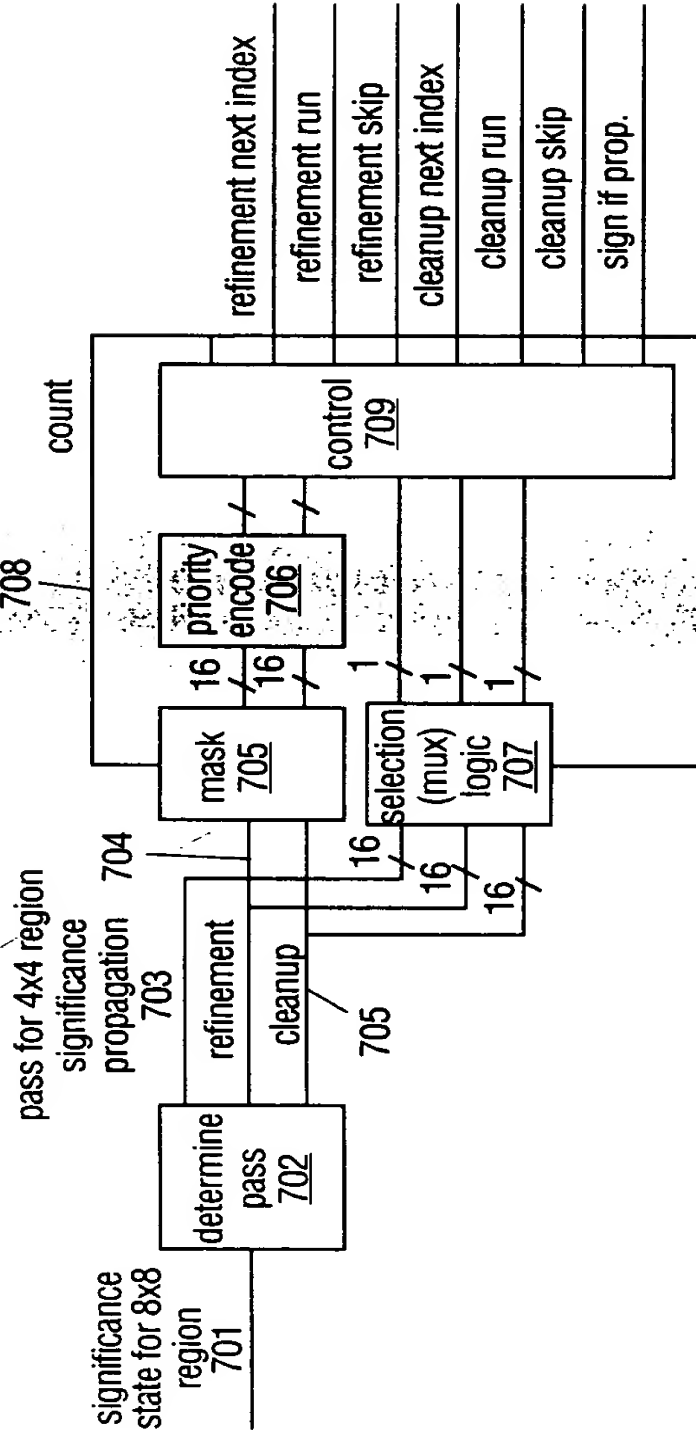


FIG. 7

SP pass: 10×2 for SP pass coefficients
6 for C and R pass coefficients
C pass: 4×2 for C pass coefficients
R pass: 2 for R pass

total: 36 clocks = 2.25 clocks per coefficient

| | | | |
|----|----|----|----|
| SP | SP | SP | SP |
| C | C | C | C |
| SP | SP | SP | SP |
| SP | R | R | SP |

SP = significance propagation
C = cleanup
R = refinement

FIG. 8



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| | 0 | 1 | 2 | 3 |
|---|---|---|---|---|
| 0 | A | A | A | A |
| 1 | B | B | B | B |
| 2 | A | A | A | A |
| 3 | B | B | B | B |
| 0 | A | A | A | A |

FIG. 9

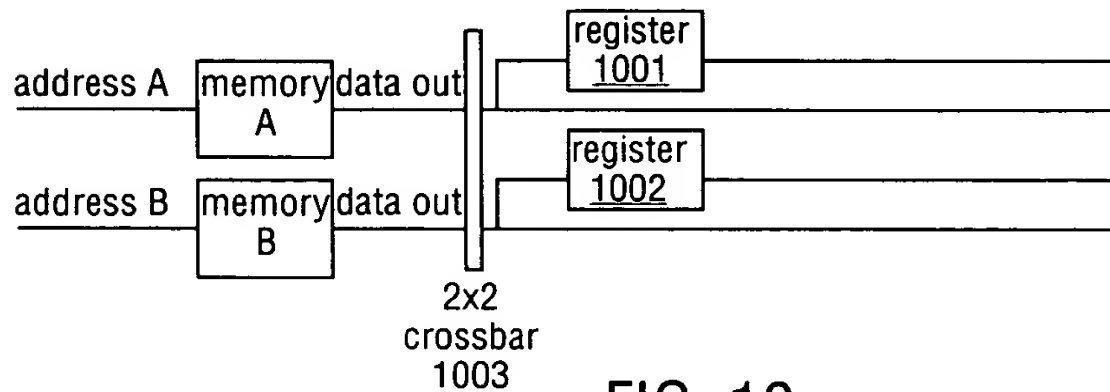
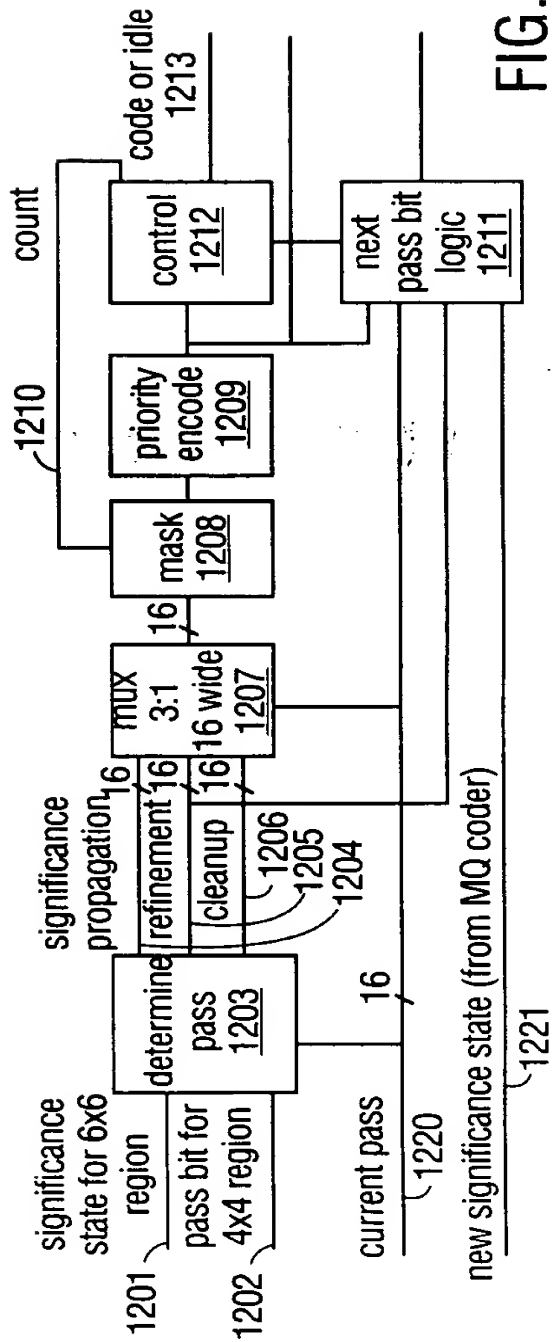
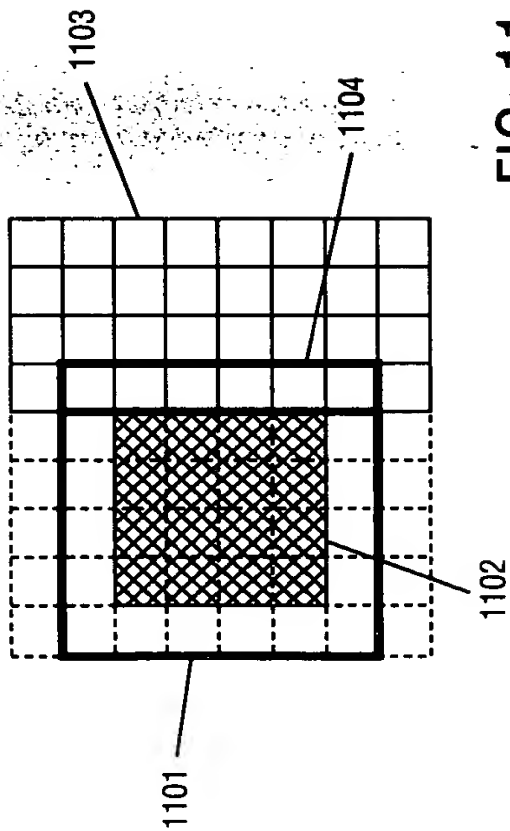


FIG. 10





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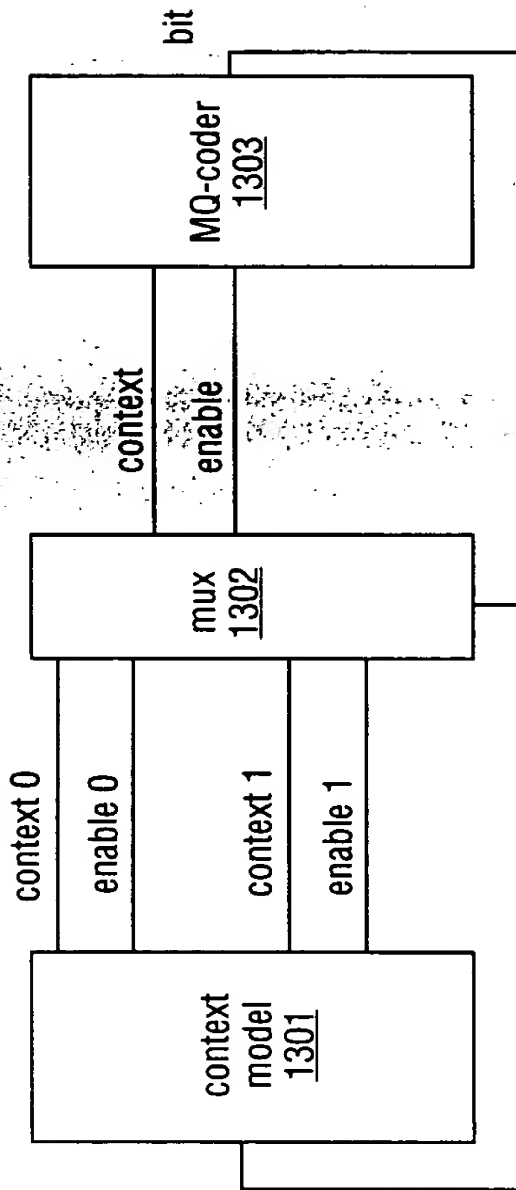


FIG. 13

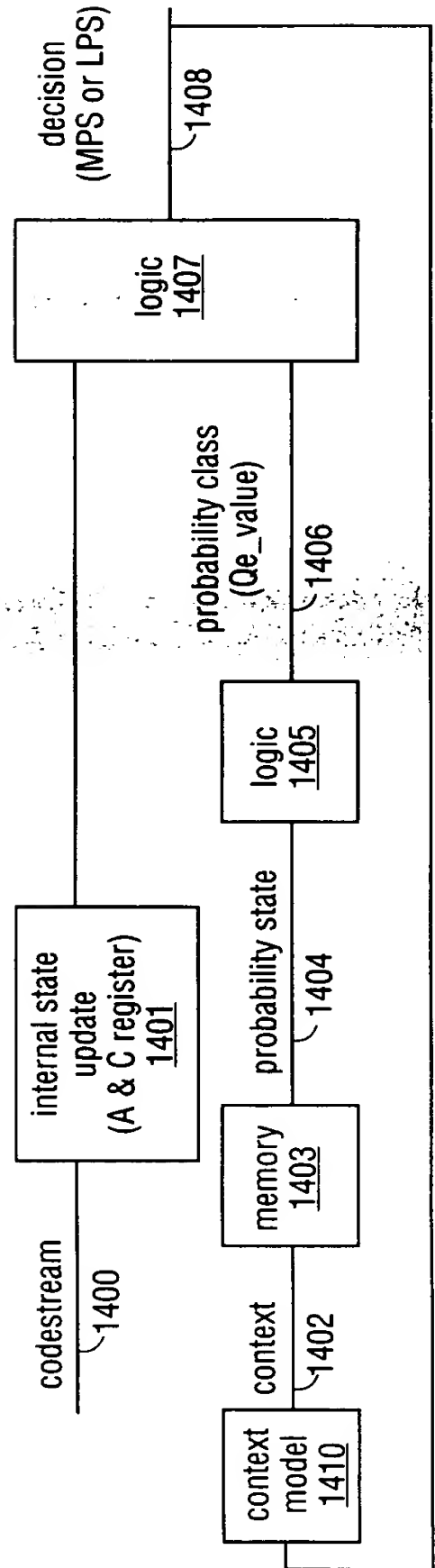
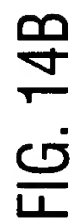


FIG. 14A



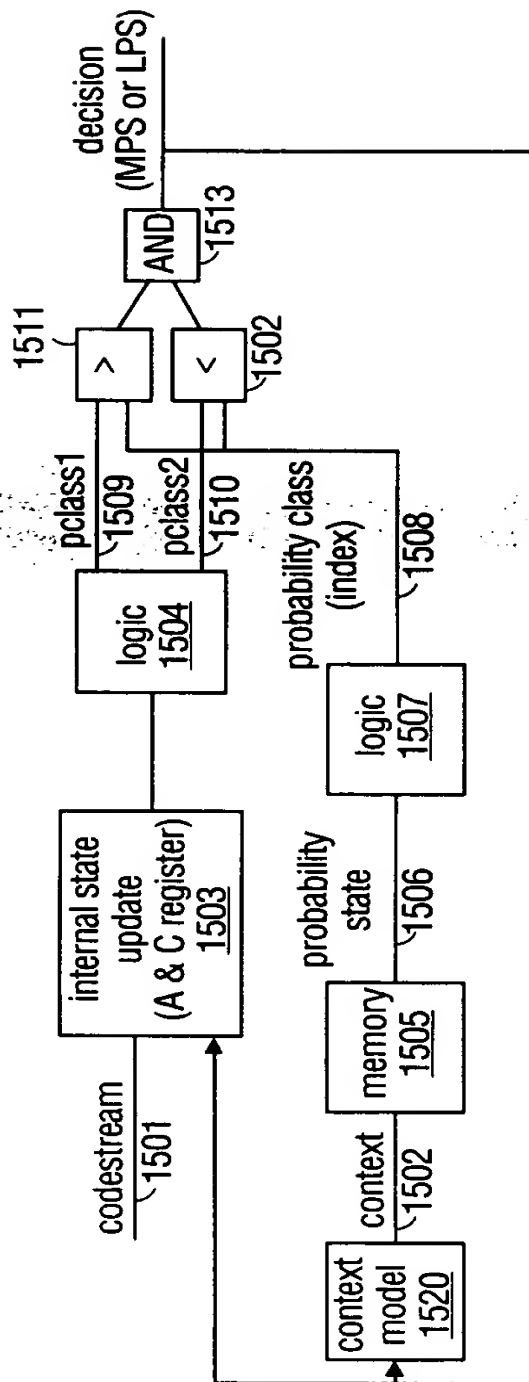


FIG. 15

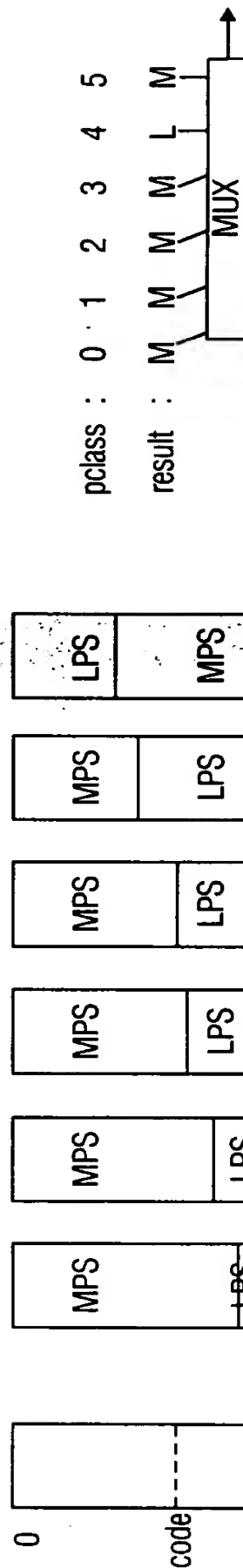


FIG. 16A

pclass : 0 1 2 3 4 5

result : M M M M L M

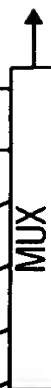


FIG. 16B



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| |
|-------|
| 5MPS |
| 4 MPS |
| 3 MPS |
| 2 MPS |
| 1 MPS |
| LPS |

FIG. 17



COPY OF PAPERS
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luminance

| | | | |
|---|---|---|---|
| A | A | A | D |
| A | A | | |
| A | | A | |
| A | | A | |

chrominance

| | | | |
|---|---|---|---|
| B | B | B | D |
| B | B | | |
| B | | B | |
| B | | B | |

chrominance

| | | | |
|---|---|---|---|
| C | C | C | D |
| C | C | | |
| C | | C | |
| C | | C | |

(A)

| | | | |
|---|---|---|---|
| A | A | A | B |
| A | A | | |
| A | | A | |
| B | | A | |

| | | | |
|---|---|---|---|
| C | C | C | D |
| C | C | | |
| C | | C | |
| D | | C | |

| | | | |
|---|---|---|---|
| E | E | E | F |
| E | E | | |
| E | | E | |
| F | | E | |

(B)

| | | | |
|---|---|---|---|
| F | F | B | C |
| F | F | | |
| A | | A | |
| A | | B | |

| | | | |
|---|---|---|---|
| G | G | C | F |
| G | G | | |
| B | | C | |
| D | | H | |

| | | | |
|---|---|---|---|
| E | E | E | E |
| E | E | | |
| D | | D | |
| G | | H | |

(C)

FIG. 18



CO. OF PAPERS
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luminance

| | | | |
|---|---|---|---|
| A | A | A | B |
| A | A | | |
| A | | A | |
| B | | A | |

chrominance

| | | | |
|---|---|---|--|
| C | C | C | |
| C | C | | |
| C | | C | |
| C | | | |

chrominance

| | | | |
|---|---|---|--|
| D | D | D | |
| D | D | | |
| D | | D | |
| D | | | |

(A)

| | | | |
|---|---|---|---|
| F | F | F | C |
| A | A | | |
| F | | F | |
| A | | B | |

| | | | |
|---|---|---|--|
| B | B | C | |
| C | C | | |
| A | | B | |
| D | | | |

| | | | |
|---|---|---|--|
| D | D | F | |
| E | E | | |
| D | E | | |
| E | | | |

(B)

| | | | |
|---|---|---|---|
| A | A | A | C |
| A | A | | |
| A | | A | |
| B | | D | |

| | | | |
|---|---|---|--|
| E | E | E | |
| E | E | | |
| E | | E | |
| F | | | |

| | | | |
|---|---|---|--|
| G | G | G | |
| G | G | | |
| G | | G | |
| H | | | |

(C)

FIG. 19



COPIES OF PAPERS
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luminance

| | | | |
|---|---|---|---|
| A | A | D | C |
| A | A | | |
| D | | A | |
| A | | | B |

chrominance

| | | | |
|---|---|---|--|
| B | B | D | |
| B | B | | |
| D | | B | |
| | | | |

chrominance

| | | | |
|---|---|---|--|
| C | C | D | |
| C | C | | |
| D | | C | |
| | | | |

(A)

| | | | |
|---|---|---|---|
| A | A | A | C |
| A | A | | |
| A | | A | |
| B | | | D |

| | | | |
|---|---|---|--|
| E | E | E | |
| E | E | | |
| E | | E | |
| | | | |

| | | | |
|---|---|---|--|
| F | F | F | |
| F | F | | |
| F | | F | |
| | | | |

(B)

| | | | |
|---|---|---|---|
| A | A | H | E |
| A | A | | |
| B | | A | |
| C | | | D |

| | | | |
|---|---|---|--|
| F | F | H | |
| F | F | | |
| B | | F | |
| | | | |

| | | | |
|---|---|---|--|
| G | G | H | |
| G | G | | |
| B | | G | |
| | | | |

(C)

FIG. 20



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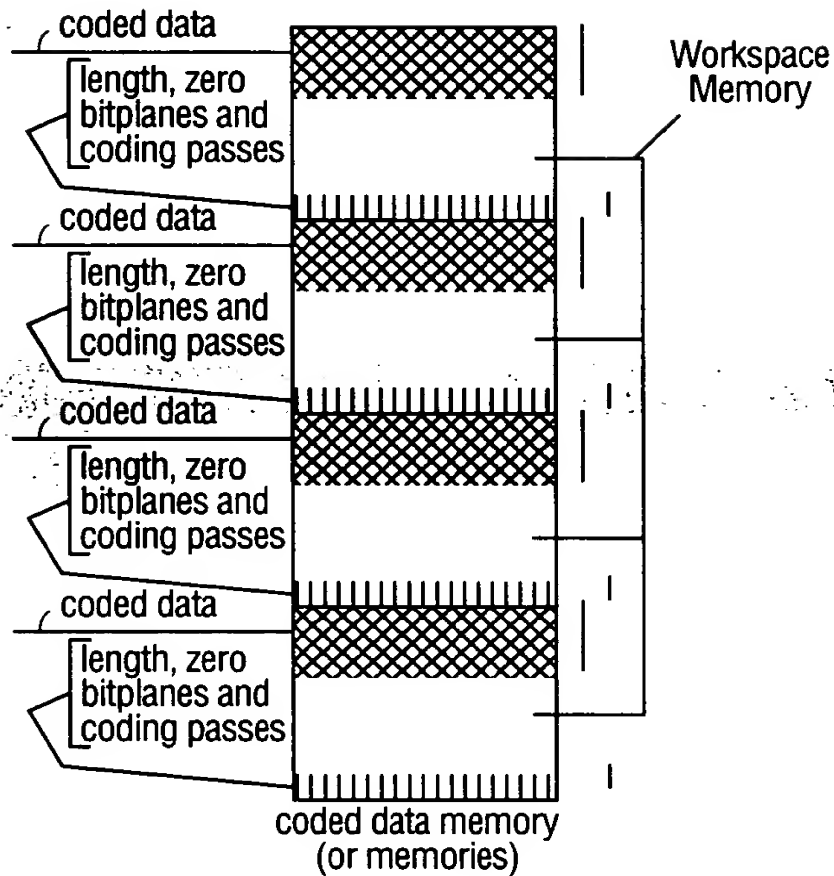
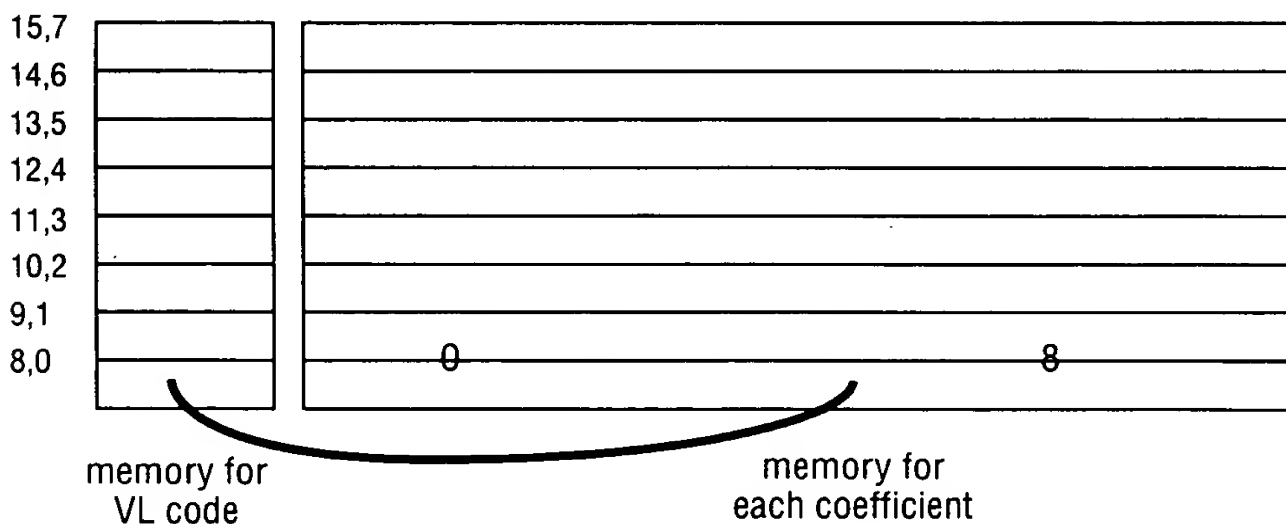
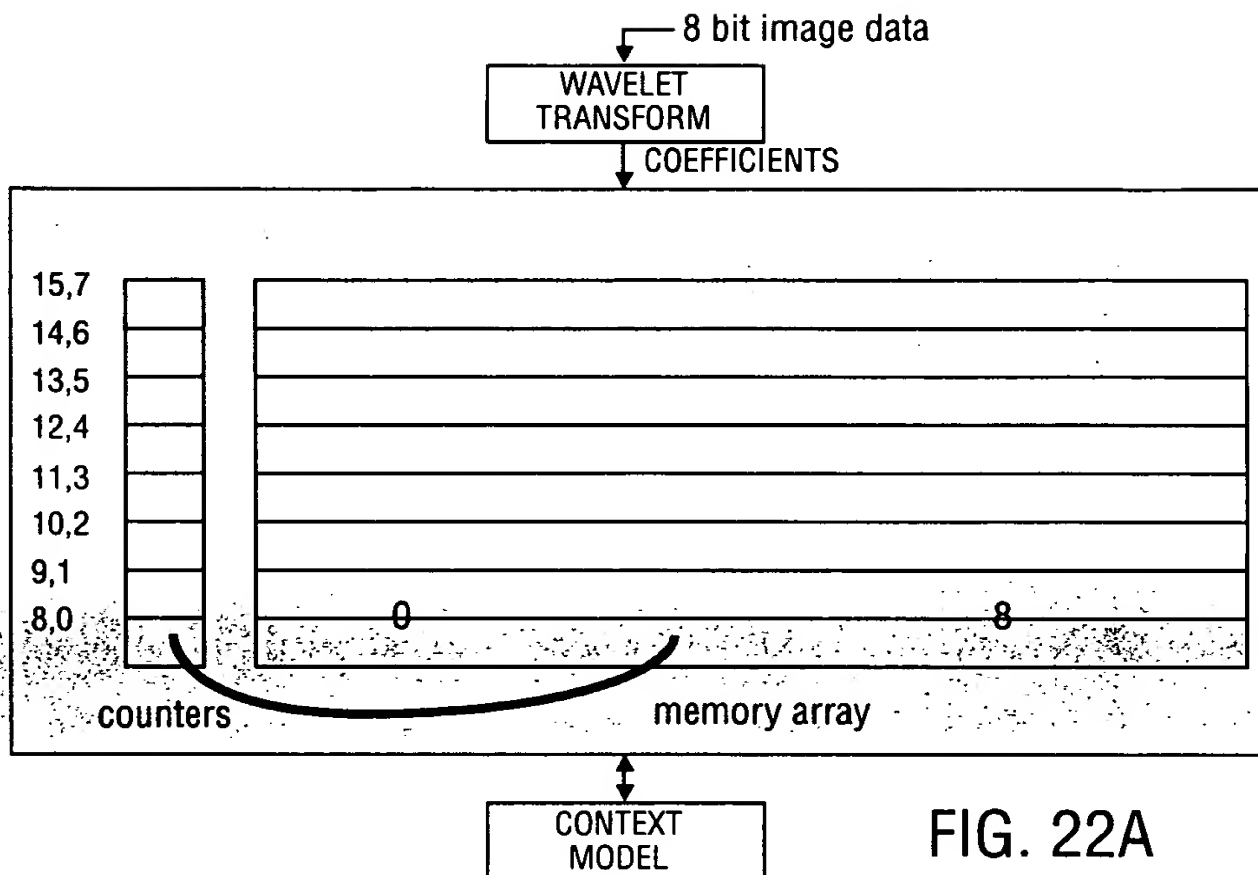


FIG. 21



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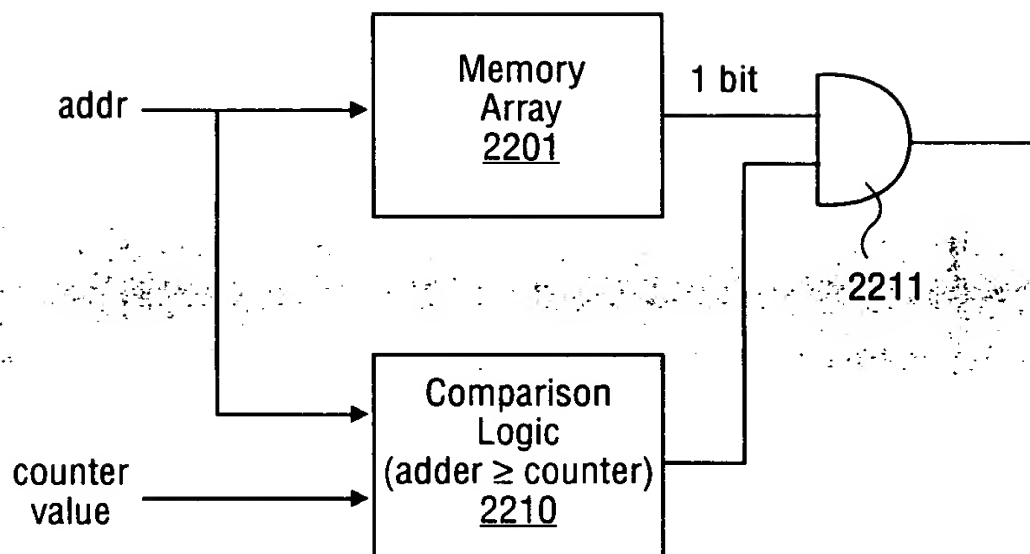


FIG. 22B

FIG. 24

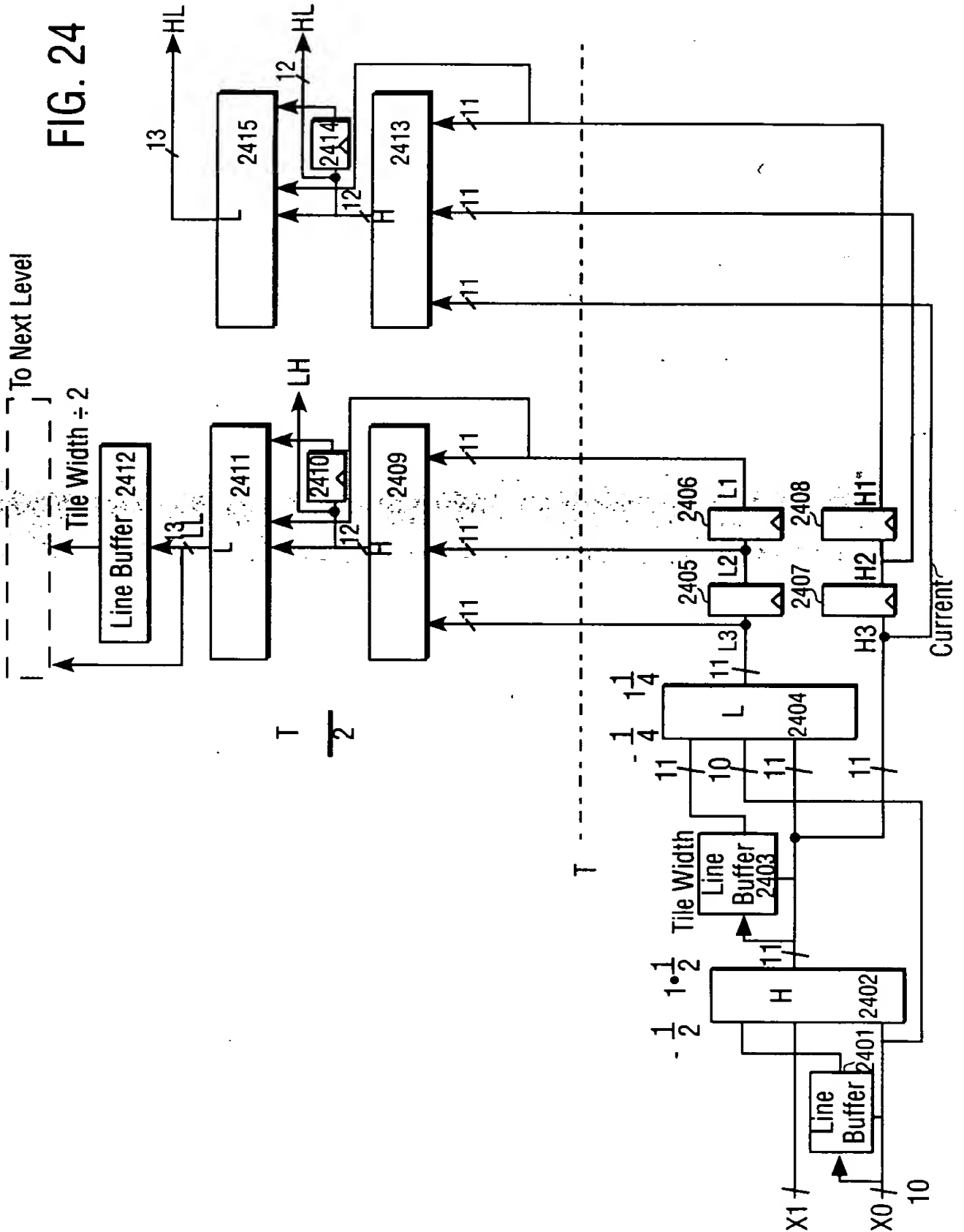
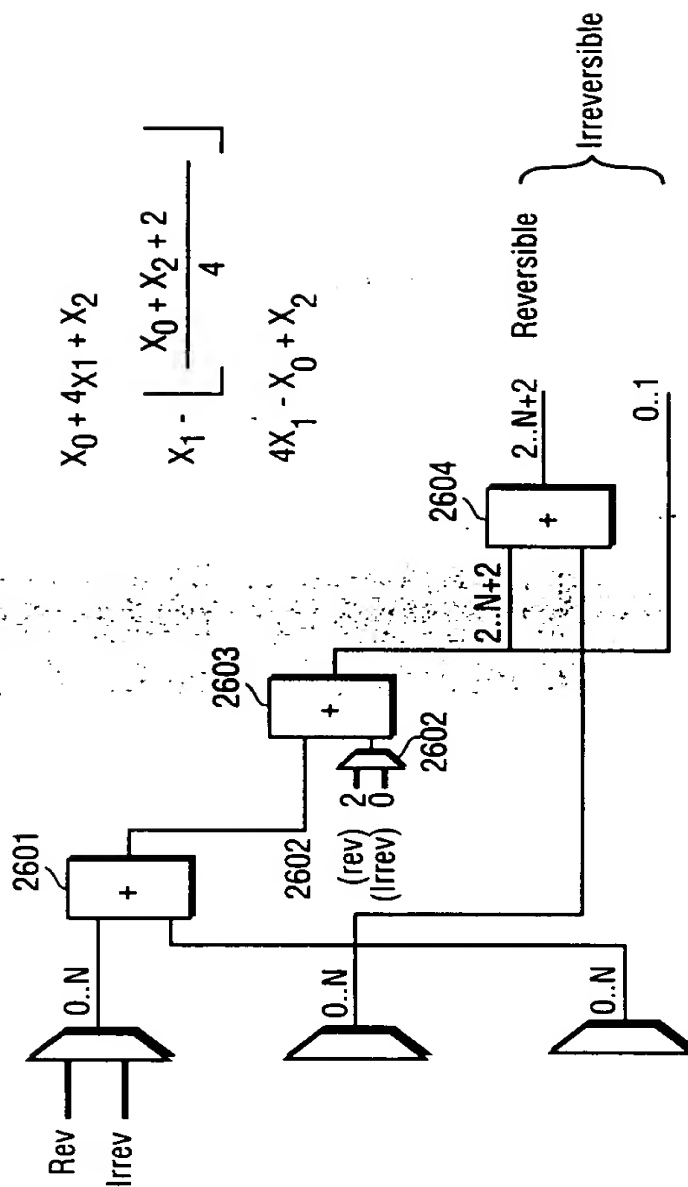
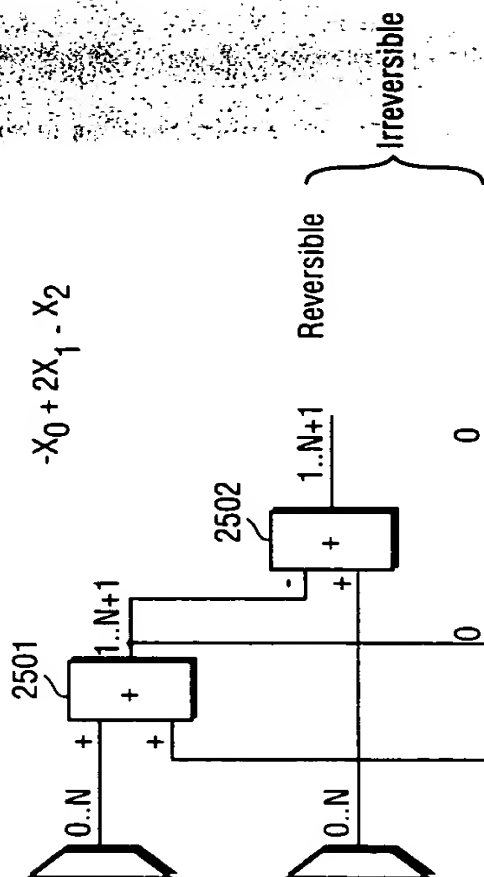


FIG. 25A



$$\begin{aligned}
 &X_0 + 4X_1 + X_2 \\
 &X_1 - \left[\frac{X_0 + X_2 + 2}{4} \right] \\
 &4X_1 - X_0 + X_2
 \end{aligned}$$

FIG. 26A

FIG. 25B

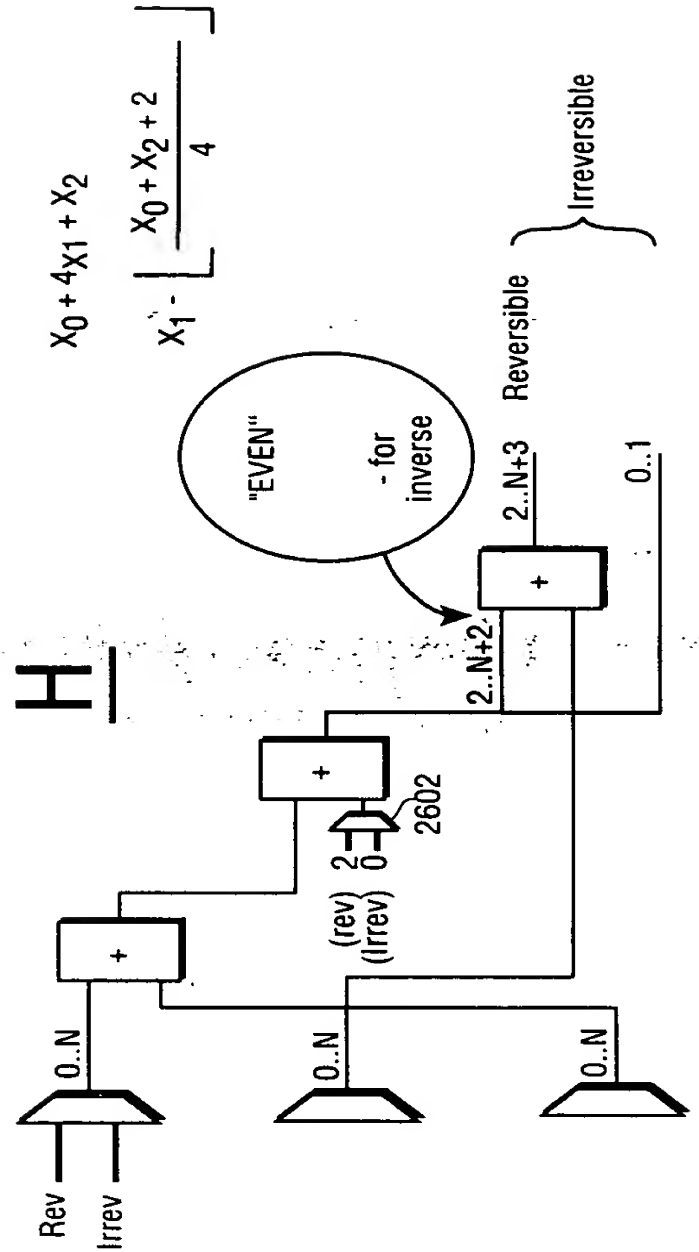
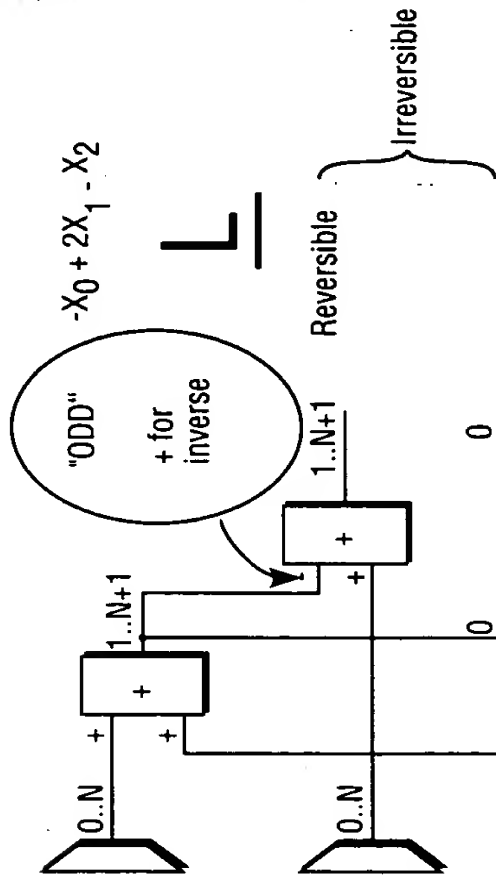
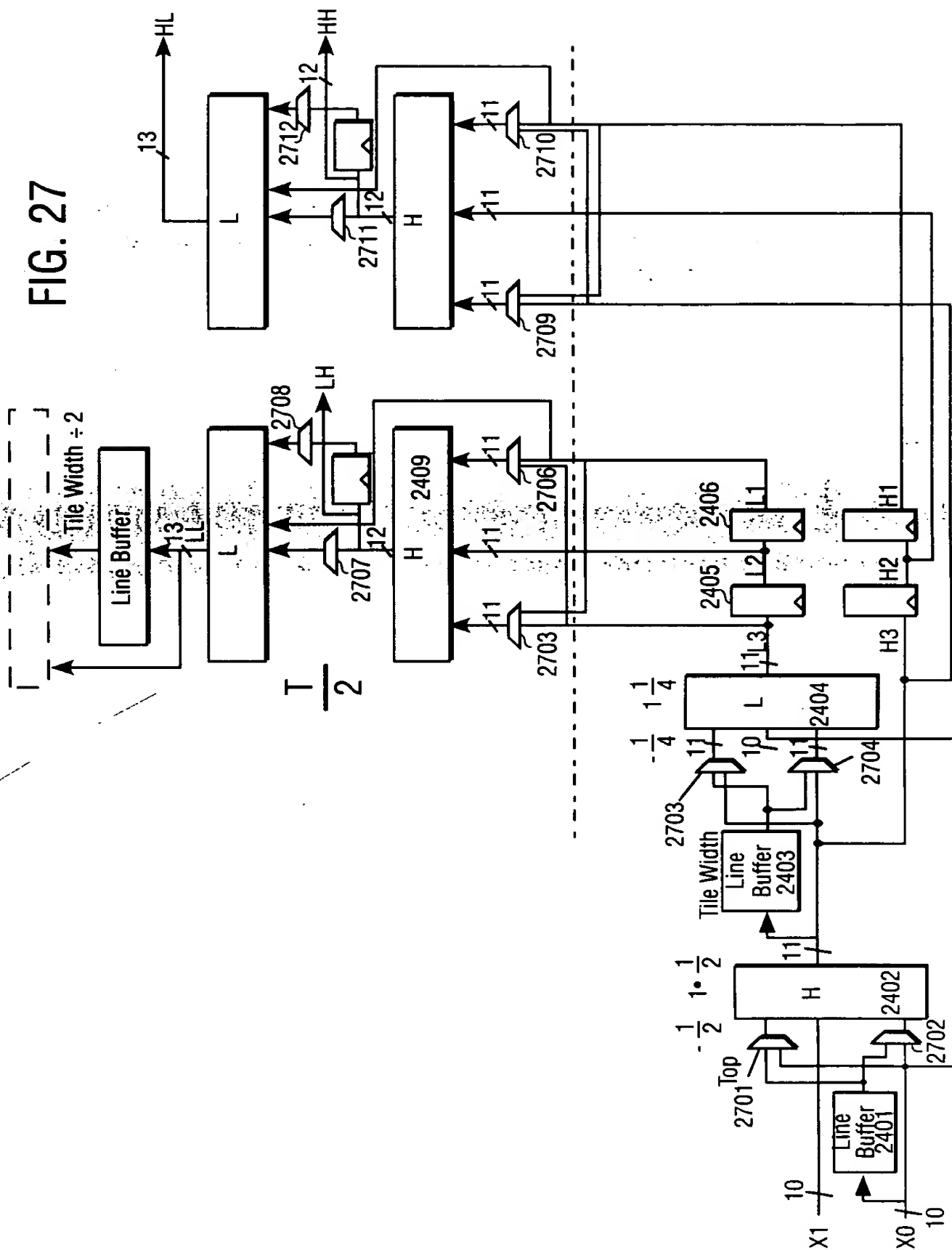


FIG. 26B

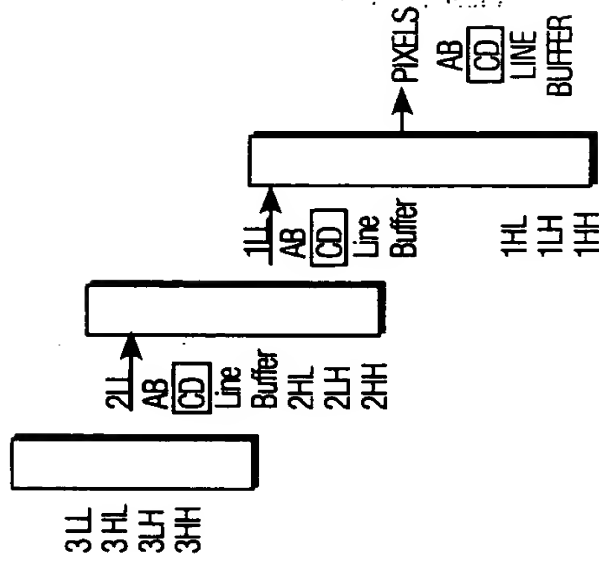


FIG. 27





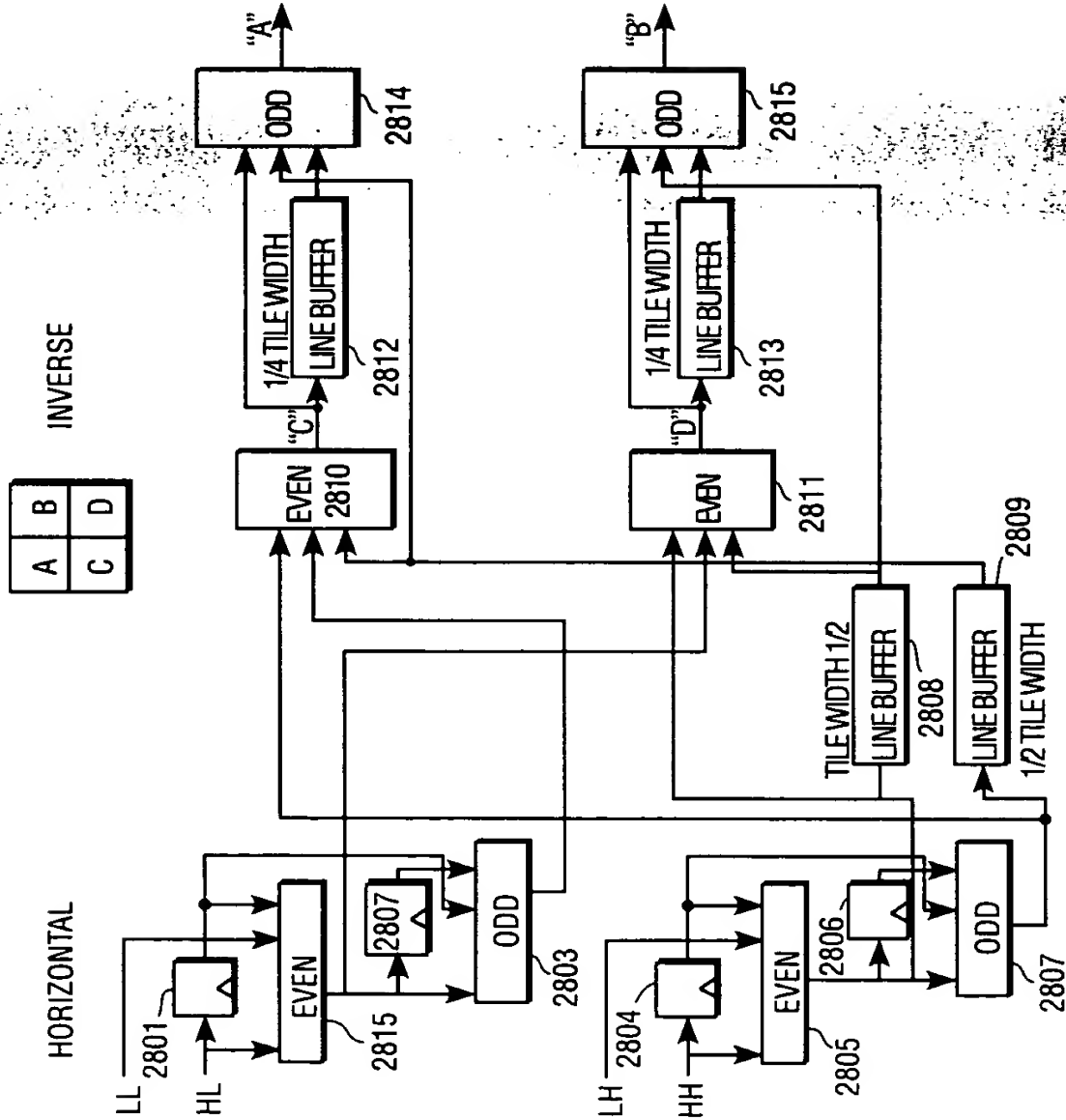
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X: ABCD ABCD ABCD...

YES: ABABAB... CDCDCD...

FIG. 28







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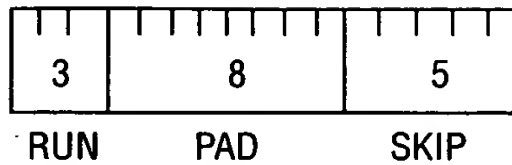


FIG. 30

8x8 region

| | | | | | | | |
|--|---|---|---|--|--|--|--|
| | | | | | | | |
| | A | B | C | | | | |
| | D | E | F | | | | |
| | G | H | I | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |

FIG. 31



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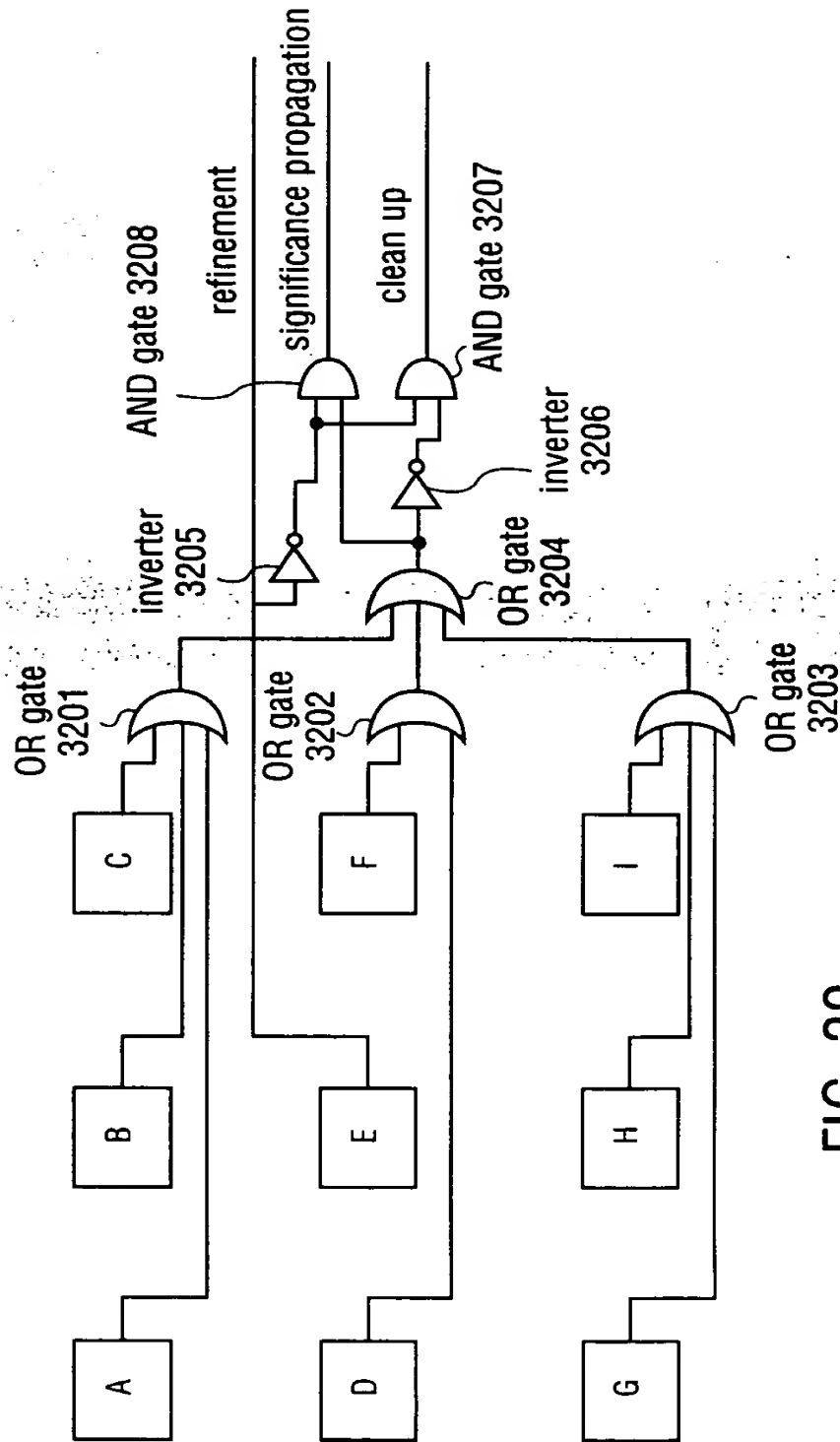


FIG. 32

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